What is claimed is:

1. A signal processing unit which calculates the value of v^p, where v is an item of floating point data made up from an E-bit exponent part and an F-bit mantissa part, and p is a constant, comprising:

an exponent part extraction section which extracts a bit series from said exponent part of said floating point data item;

a mantissa part extraction section which extracts the most significant K bits from said mantissa part of said floating point data item;

a first conversion section which inputs the output e of said exponent part extraction section and outputs the value of a function X(e) thereof;

a second conversion section which inputs the output f of said mantissa part extraction section and outputs the value of a function Y(f) thereof; and

a multiplier section which multiplies together the output value from said first conversion section and the output value from said second conversion section;

wherein:

when i and j are taken as integers, said function X(i) is a function which returns the value:

$X(i)=2^{((i-((1<<E-1)-1)-K)*p)}$,

and said function Y(j) is a function which returns the value:

$Y(j)=((1<<K)+j)^{p}$.

2. A signal processing unit according to claim 1, wherein:

said first conversion section is constituted as a table in which, for each address i, the value of X(i) is stored in advance; and

said second conversion section is constituted as a table in which, for each address j, the value of Y(j) is stored in advance.

3. A signal processing unit which calculates the value of v^{p}, where v is an item of floating point data made up from an E-bit exponent part and an F-bit mantissa part, and p is a constant, comprising:

an exponent part extraction section which extracts a bit series from said exponent part of said floating point data item;

a mantissa part extraction section which extracts the most significant K bits from said mantissa part of said floating point data item;

a first conversion section which inputs the output e of said exponent part extraction section and outputs the value of a function X(e) thereof;

a second conversion section which inputs the output f of said mantissa part extraction section and outputs the value of a function Y(f) thereof; and

a multiplier section which multiplies together the output value from said first conversion section and the output value from said second conversion section;

wherein:

when i and j are taken as integers, for some real number S, said function X(i) is a function which returns the value:

$X(i)=2^{((i-((1<<E-1)-1)-K)*p)*S}$,

and said function Y(j) is a function which returns the value:

$Y(j)=((1<<K)+j)^{p/S}$.

4. A signal processing unit according to claim 3, wherein:

said first conversion section is constituted as a table in which, for each address i, the value of X(i) is stored in advance;

and said second conversion section is constituted as a table in which, for each address j, the value of Y(j) is stored in advance.

5. A signal processing unit which, where v is an item of floating point data made up from an E-bit exponent part and an F-bit mantissa part, when the value of v is greater than or equal to 2.0 and less than 2^N, where N is a natural number, calculates and outputs the value of v raised to the power 1 and converted to an integer value, comprising:

an exponent and mantissa part extraction section which, when the number of bits in which (N-2) is expressed in binary notation is M, extracts a bit field consisting of at least the lowermost M bits of said exponent part and at least the uppermost (N-1) bits of said mantissa part; and:

a third conversion section which, when the value expressed by said bit field which has been extracted by said exponent and mantissa part extraction section is w, stores in a table in advance the values of v converted into integer values in all the addresses w extracted by this bit field, and which inputs the value w given by said bit field and reads out the corresponding value from said table.

6. A signal processing method operable to calculate the value of v^p, where v is an item of floating point data made up

from an E-bit exponent part and an F-bit mantissa part, and p is a constant, comprising the steps of:

extracting a bit series from said exponent part of said floating point data item;

extracting the most significant K bits from said mantissa part of said floating point data item;

inputting the output e of the exponent part extraction and outputting the value of a function X(e) thereof, by storing in a table, for integer values of i, values X(i) to be returned given by 2^((i-((1<<E-1)-1)-K)*p);

inputting the output f of the mantissa part extraction and outputting the value of a function Y(f) thereof, by storing in a table, for integer values of j, values Y(j) to be returned given by ((1<<K)+j)^p; and:

multiplying together the output values of said functions X(e) and Y(f).

7. A signal processing method for, where v is an item of floating point data made up from an E-bit exponent part and an F-bit mantissa part, when the value of v is greater than or equal to 2.0 and less than 2^N, where N is a natural number, calculating and outputting the value of v raised to the power 1 and converted to an integer value, comprising the steps of:

when the number of bits in which (N-2) is expressed in binary notation is M, extracting a bit field consisting of at least the lowermost M bits of said exponent part and at least the uppermost (N-1) bits of said mantissa part; and:

when the value expressed by said bit field which has been thus extracted is w, storing in a table in advance the values of v converted into integer values in all the addresses w extracted by this bit field, and inputting the value w given by said bit field and reading out the corresponding value from said table.

8. A computer readable medium storing instructions for performing a signal processing method operable to calculate the value of v^p, where v is an item of floating point data made up from an E-bit exponent part and an F-bit mantissa part, and p is a constant, comprising the steps of:

extracting a bit series from said exponent part of said floating point data item;

extracting the most significant K bits from said mantissa part of said floating point data item;

inputting the output e of the exponent part extraction and outputting the value of a function X(e) thereof, by storing in a table, for integer values of i, values X(i) to be returned given by 2^((i-((1<<E-1)-1)-K)*p);

inputting the output f of the mantissa part extraction and outputting the value of a function Y(f) thereof, by storing in a table, for integer values of j, values Y(j) to be returned given by ((1<<K)+j)^p; and:

multiplying together the output values of said functions X(e) and Y(f).

9. A computer readable medium storing instructions for performing a signal processing method for, where v is an item of floating point data made up from an E-bit exponent part and an F-bit mantissa part, when the value of v is greater than or equal to 2.0 and less than 2^N, where N is a natural number, calculating and outputting the value of v raised to the power 1 and converted to an integer value, comprising the steps of:

when the number of bits in which (N-2) is expressed in binary notation is M, extracting a bit field consisting of at least the lowermost M bits of said exponent part and at least the uppermost (N-1) bits of said mantissa part; and:

when the value expressed by said bit field which has been thus extracted is w, storing in a table in advance the values of v converted into integer values in all the addresses w extracted by this bit field, and inputting the value w given by said bit field and reading out the corresponding value from said table.

10. A program product for performing a signal processing method operable to calculate the value of v^p, where v is an item of floating point data made up from an E-bit exponent part and an F-bit mantissa part, and p is a constant, comprising the steps of:

extracting a bit series from said exponent part of said floating point data item;

extracting the most significant K bits from said mantissa part of said floating point data item;

inputting the output e of the exponent part extraction and outputting the value of a function X(e) thereof, by storing in a table, for integer values of i, values X(i) to be returned given by 2^((i-((1<<E-1)-1)-K)*p);

inputting the output f of the mantissa part extraction and outputting the value of a function Y(f) thereof, by storing in a table, for integer values of j, values Y(j) to be returned given by ((1<<K)+j)^p; and:

multiplying together the output values of said functions X(e) and Y(f).

11. A program product for performing a signal processing method for, where v is an item of floating point data made up

from an E-bit exponent part and an F-bit mantissa part, when the value of v is greater than or equal to 2.0 and less than 2^N, where N is a natural number, calculating and outputting the value of v raised to the power 1 and converted to an integer value, comprising the steps of:

when the number of bits in which (N-2) is expressed in binary notation is M, extracting a bit field consisting of at least the lowermost M bits of said exponent part and at least the uppermost (N-1) bits of said mantissa part; and:

when the value expressed by said bit field which has been thus extracted is w, storing in a table in advance the values of v converted into integer values in all the addresses w extracted by this bit field, and inputting the value w given by said bit field and reading out the corresponding value from said table.